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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,349	01/14/2002	Christopher Anthony Park	30001035 US-02	2889

7590

05/21/2003

Paul D. Greeley, Esq.  
Ohlandt, Greeley, Ruggiero & Perle, L.L.P.  
10th Floor  
One Landmark Square  
Stamford, CT 06901-2682

EXAMINER

HASAN, MOHAMMED A

ART UNIT

PAPER NUMBER

2873

DATE MAILED: 05/21/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/046,349

Applicant(s)

PARK, CHRISTOPHER ANTHONY

Examiner

Mohammed Hasan

Art Unit

2873

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.


- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on 14 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☐ Claim(s) 1- 10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1- 5, 7- 9 is/are rejected.
- 7) ☒ Claim(s) 6 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

  
Loha Ben  
Primary Examiner

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 January 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2 6) ☐ Other:

## DETAILED ACTION

### *Information Disclosure Statement*

1. The prior art documents submitted by applicant in the Information Disclosure Statement filed on January 14, 2002 have all been considered and made of record (note the attached copy of form PTO – 1449).

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1- 5, 7 – 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Banks (4,950,884).

Regarding claim 1, Banks disclose (refer to figure 1 through 4) an electro-modulating device (10) comprising:

- a modulating element;
- a light reflector (39) ;
- electrodes (34 and 36);
- electric wires (40 and 42) connecting the electrodes 34 and 36.

Banks disclose all of the claimed limitations except the input-output surface, the medium and the reflector are arranged so that the light enters the medium through the input – output surface, travels through the medium towards the reflector, is reflected by the reflector to travel back through the medium towards the input- output surface and exit the medium through the input-output surface. However, Banks disclose a device and method for modulating light intensity in accordance with a varying electrical signal and which can receive constant amplitude light through an optical fiber, modulate the light and return the modulated light to the source through the same fiber (col. 2, lines 56 – 61). It would have been obvious to one of ordinary skill in the art at the time the invention was made to provide input-output surface of the modulator for the purpose of improving electro – optic information sensing system and method which are more efficient than those taught by Banks (column 2, lines 46 – 52).

Regarding claim 2, Banks disclose a modulating element formed from a section of semiconductor wafer and a modulating medium (26) formed from an active layer on a semiconductor wafer, the active layer having a plurality of edges and the input-output surface residing on an edge of the active layer (column 4, lines 52 – 68, column 5, lines 1- 4).

Regarding claim 3, Banks disclose the modulating medium (26) which is an active layer situated between the a first layer of conducting semiconductor and a second layer of conducting semiconductor, the first and second layers of conducting semiconductor forming the electrodes for applying a bias across the modulating medium (as shown in figure 2, electrodes 34 and 36).

Regarding claim 4, Banks disclose the electro-modulating device having a mounting surface on which there is mounted the modulating element (e.g., as shown in figure 2, modulating medium 26 mounted on the surface).

Regarding claim 5, Banks disclose the mounting surface having a securing means for securing the end portion of an optic fiber (12) such that a light from the fiber can be coupled into and out of the modulating medium through the input – output surface (as shown in figure 2).

Regarding claim 7, Banks disclose the mounting surface having a light guide formed thereon for guiding light into and out of the modulating element (as shown in figure 1 and column 2, lines 55 – 61).

Regarding claim 8, Banks disclose the light guide and modulating medium (26) formed from a continuous layer of semiconductor (column 4, lines 37 – 65).

Regarding claim 9, Banks disclose the modulating element having at least one end wall (24) and the reflector (39) is formed by at least one layer of reflective material deposited on the end wall of the modulator element (column 4, lines 8 – 12).

***Allowable Subject Matter***

3. Claims 6 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

4. The following is a statement of reasons for the indication of allowable subject matter: The prior art fails to show a silicon substrate having a V- groove etched thereon for receiving the end portion of an optic fiber and the modulating medium formed from a layer of InGaAsP, and the each electrode formed from a layer of conducting InP.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The closest prior art, Cummings (5,886,807), discloses a traveling – wave electro modulator using a reflected signal to achieve a one-time rephrasing.

### ***Conclusion***

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mohammed Hasan whose telephone number is (703) 306-0089. The examiner can normally be reached on M-TH, 7:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Georgia Epps can be reached on (703) 308-4883. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7724 for regular communications and (703) 306-5515 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

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May 18, 2003



Loha Ben  
Primary Examiner